

CLAIMS

What is claimed is:

1. (Currently Amended) A light valve for use in high contrast reflective microdisplays, comprising:

a light source that emits non-polarized light;

a homeotropic vertically aligned nematic mode reflective liquid crystal cell with no pre-tilt inducing mechanism and no director orientation in a voltage applied state;

a first circular polarizer of a first handedness positioned in the a path of the light between said the light source and said the liquid crystal cell, whereby light incident upon the liquid crystal cell is circularly polarized in a first direction; and

a second circular polarizer of the first handedness positioned in the a path of the light reflected by said liquid crystal cell.

2. (Original) The light valve of claim 1 wherein said light is generally on-axis to said first circular polarizer, said liquid crystal cell, and said second circular polarizer.

3. (Original) The light valve of claim 1 wherein said light is generally off-axis to said first circular polarizer, said liquid crystal cell, and said second circular polarizer.

4. (Original) The light valve of claim 1 wherein at least one circular polarizer is comprised of a linear polarizer and a quarter wave retarder.

5. (Original) The light valve of claim 1 wherein at least one circular polarizer is a cholesteric film.

6. (Currently Amended) The light valve of claim 1, wherein said liquid crystal cell is ~~an LCOS~~ a liquid crystal on silicon type cell.

7-8. (Cancelled).

9. (Currently Amended) A light valve for use in high contrast reflective microdisplays, comprising:

a light source that emits non-polarized light;

a homeotropic vertically aligned nematic mode reflective liquid crystal cell with no pre-tilt inducing mechanism and no director orientation in a voltage applied state;

a first circular polarizer of a first handedness positioned between ~~said~~ the light source and ~~said~~ the liquid crystal cell;

a non-polarizing beam splitter positioned to reflect the light exiting ~~said~~ the first circular polarizer toward the liquid crystal cell; and

a second circular polarizer of a second handedness positioned in ~~the~~ a path of the light reflected by ~~said~~ the liquid crystal cell;

~~wherein the light is generally on axis to said first circular polarizer, said liquid crystal cell, and said second circular polarizer.~~

10. (Original) The light valve of claim 9 wherein at least one circular polarizer is comprised of a linear polarizer and a quarter wave retarder.

11. (Original) The light valve of claim 9 wherein at least one circular polarizer is a cholesteric film.

12. (Currently Amended) The light valve of claim 9, wherein said liquid crystal cell is ~~an LCoS~~ a liquid crystal on silicon type cell.

13-14. (Cancelled).

15. (Original) The light valve of claim 9, wherein said first circular polarizer and said second circular polarizer are of opposite handedness.

16. (Original) A light valve for use in high contrast reflective microdisplays,

comprising:

a light source that emits non-polarized light;

a homeotropic vertically aligned nematic mode reflective liquid crystal cell;

a first circular polarizer positioned between said light source and said liquid crystal cell; and

a second circular polarizer positioned in the path of the light reflected by said liquid crystal cell;

wherein light is generally off-axis to said first circular polarizer, said liquid crystal cell, and said second circular polarizer.

17. (Original) The light valve of claim 16 wherein at least one circular polarizer is comprised of a linear polarizer and a quarter wave retarder.

18. (Original) The light valve of claim 16 wherein at least one circular polarizer is a cholesteric film.

19. (Original) The light valve of claim 16, wherein said liquid crystal cell is an LCoS cell.

20. (Original) The light valve of claim 16, wherein said liquid crystal cell is a perfectly homeotropic vertically aligned nematic mode reflective liquid crystal cell.

21. (Original) The light valve of claim 16, wherein said liquid crystal cell has no director pretilt.

22. (Original) The light valve of claim 16, wherein said first circular polarizer and said second circular polarizer are of the same handedness.

23. (Original) The light valve of claim 16, wherein said first circular polarizer and said second circular polarizer are generally parallel to said liquid crystal cell.

24. (Currently Amended) A method of utilizing a homeotropic vertically aligned nematic mode reflective liquid crystal cell having no pre-tilt inducing mechanism or preferred field applied tilt direction to produce a high contrast microdisplay, comprising the steps of:

passing non-polarized light from a light source through a first circular polarizer of a first handedness;
reflecting circularly polarized light off a bottom substrate of a reflective liquid crystal cell; and
passing light reflected off said bottom substrate through a second circular polarizer of a second handedness.

25. (Original) The method of claim 24 wherein at least one circular polarizer is comprised of a linear polarizer and a quarter wave retarder.

26. (Original) The method of claim 24 wherein at least one circular polarizer is a cholesteric film.

27. (Currently Amended) The method of claim 24, wherein said liquid crystal cell ~~is an LCOS~~ a liquid crystal on silicon type cell.

28. (Original) The method of claim 24, wherein said liquid crystal cell is a perfectly homeotropic vertically aligned nematic mode reflective liquid crystal cell.

29. (Currently Amended) A structure for controlling the transmission of light for use in high contrast reflective microdisplays, comprising:

a light source that emits non-polarized light;
a non-pretitled perfectly homeotropic vertically aligned nematic mode

reflective liquid crystal cell;

a first circular polarizer of a first handedness positioned between said light source and said liquid crystal cell; and

a second circular polarizer of the first handedness positioned in ~~the~~ a path of light reflected from said liquid crystal cell.

30. (New) The light valve of claim 9, wherein the light is generally on-axis to said first circular polarizer, said liquid crystal cell, and said second circular polarizer.

31. (Original) The light valve of claim 30 wherein said circular polarizer is comprised of a linear polarizer and a quarter wave retarder.

32. (Original) The light valve of claim 30 wherein said circular polarizer is a cholesteric film.

33. (Original) The light valve of claim 30, wherein said liquid crystal cell is an LCoS cell.

34. (Original) The light valve of claim 30, wherein said liquid crystal cell is a perfectly homeotropic vertically aligned nematic mode reflective liquid crystal cell.

35. (Original) The light valve of claim 30, wherein said liquid crystal cell has no director pretilt.

36. (Original) The light valve of claim 30, wherein said circular polarizer is generally parallel to said liquid crystal cell.

37. (Original) A method of utilizing a homeotropic vertically aligned nematic mode reflective liquid crystal cell having no pre-tilt inducing mechanism to produce a high contrast direct view display, comprising the steps of:

passing non-polarized light from a light source through a circular polarizer;
reflecting circularly polarized light off a bottom substrate of a reflective
liquid crystal cell;
and passing light reflected off said bottom substrate through said circular
polarizer.

38. (Original) The method of claim 37 wherein said circular polarizer is
comprised of a linear polarizer and a quarter wave retarder.

39. (Original) The method of claim 37 wherein said circular polarizer is a
cholesteric film.

40. (Original) The method of claim 37, wherein said liquid crystal cell is an
LCoS cell.

41. (Original) The method of claim 37, wherein said liquid crystal cell is a
perfectly homeotropic vertically aligned nematic mode reflective liquid crystal cell.